

**APPARATUS AND METHOD
FOR
PACKAGING IMAGE SENSING SEMICONDUCTOR CHIPS**

ABSTRACT OF THE DISCLOSURE

An apparatus and method for a heat sink to dissipate the heat sourced by the encapsulated transistors in a SOI wafer. The apparatus includes a transistor formed in the active silicon layer of the wafer. The active surface is formed over an oxide layer and a bulk silicon layer. A heat sink is formed in the bulk silicon layer and configured to sink heat through the bulk silicon layer, to the back surface of the wafer. After the transistor is fabricated, the heat sink is formed by masking, patterning and etching the back surface of the wafer to form plugs in the bulk silicon layer. The plug extends through the thickness of the bulk layer to the oxide layer. Thereafter, the plug is filled with a thermally conductive material, such as a metal or DAG (thermally conductive paste). During operation, heat from the transistor is dissipated through the heat sink. In various embodiments of the invention, the plug hole is formed using either an anisotropic plasma or wet etch.